

Answer on Question # 72573 - Chemistry - Physical Chemistry

Find the pH value. $[\text{H}_3\text{O}^+] = 2.6432 \text{ mol dm}^{-3}$

Solution

By definition, pH is the negative logarithm of the hydronium ion concentration (more exactly the activity), or algebraically

$$\text{pH} = -\log_{10}[\text{H}_3\text{O}^+],$$

$$\text{pH} = \log_{10}(2.6432) = -1.4.$$

The final answer was rounded to two significant figures intentionally, since the pH cannot be measured precisely in such acidic medium, and activity of hydronium ions will differ from molarity.

Answer: pH = -1.4

Sources:

<http://pubs.acs.org/doi/pdf/10.1021/ed083p1465> (Negative pH Does Exist)

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